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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/665,479

09/22/2003

Toshiyuki Kikuchi

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10/26/2004

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EXAMINER

CHEN, SOPHIA S

ART UNIT

PAPER NUMBER

2852

DATE MAILED: 10/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/665,479

Applicant(s)

KIKUCHI, TOSHIYUKI

Examiner

Sophia S. Chen

Art Unit

2852

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-21 is/are allowed.
- 6) ☒ Claim(s) 1-14 and 22 is/are rejected.
- 7) ☒ Claim(s) 15 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/17/04, 3/16/04, 9/19/04, and 9/20/04</u> | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “supporting unit that movably supports the cleaning unit” (claim 10) and “a movement controlling unit” (claim 10) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
3. The disclosure is objected to because of the following informalities: Page 9, line 14, "105" and "1012" should be "10⁵" and "10¹²", respectively. Appropriate correction is required.

Claim Objections

4. Claims 11 and 13 are objected to because of the following informalities:
 - a. Claim 11, last line, "105" and "1012" should be "10⁵" and "10¹²", respectively.
 - b. Claim 13, last line, "Teflon (trade mark)" should not be in the claim; therefore, it should be written as "perfluoroalkoxy".Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 3, 5-7, 10-15, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Omata et al. (US Pat Pub. No. US 2002/0090236 A1) in view of Nagamine et al. (US Pat Pub. No. US 2002/0001476 A1)

Omata et al. discloses an image forming apparatus comprising: a first image carrier (an electrophotographic photoreceptor; paragraph [0030]) 1 that transfers an image to a first surface of a recording medium P (paragraphs [0046] and [0047]); a second image carrier (a belt) 10 that transfers an image to a second surface of the recording medium P (paragraph [0048]); a conveying unit 28 that directly conveys the recording medium P, to which the image has been transferred by the second image carrier 10, from the second image carrier 10 to a fixing unit 30C (Figures 1 and 3); the second image carrier 10 is made of heat-resistant material (paragraph 0032)]; a cooling unit (includes a heat pipe) 16 that cools the second image carrier 10 (paragraphs [0033] and [0056]); and a cleaning unit 25 (or a cleaning roller 25a) that cleans toner remaining on the second image carrier 10.

Omata et al. further discloses a supporting unit that movably supports the cleaning unit 25 in such a manner that the cleaning unit 25 touches the second image carrier 10 or separates from the second image carrier 10 (paragraph [0035] and Figures 1 and 3); a movement controlling unit (inherently) that controls the supporting unit, wherein when there is an image on the second image carrier 10, the movement controlling unit controls the supporting unit in such a manner that the cleaning unit 25 separates from the second image carrier 10 (paragraph [0055]); the second image carrier (belt) 10 having a surface resistivity of a range from 10^5 to 10^{12} Ω/sq (paragraph [0032]); a toner releasing layer (PFA (perfluoroalkoxy)) is formed on the second image carrier 10 (paragraph [0032]); inherently, PFA (perfluoroalkoxy) is Teflon (trade mark) (see Tompkins et al., US Pat. No. 5,053,827, and Schlueter, Jr. et al., US Pat. No.

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6,365,280 B1); a gap between a position at which a recording medium P on the second image carrier 10 is transferred to the fixing unit 30C and a position at which the recording medium P is received in the fixing unit 30C, and a width of the gap is 60 mm or less (by comparing the size of the recording medium P (usually around 11 inches) in Figures 1 and the gap in Figure 3); an information processing unit HC connected to the image forming apparatus through a communication means (paragraph [0135] and Figure 16); and an image formation controlling unit that performs controls over image formation including transmission of data for image formation from the information process unit HC to the image forming apparatus (paragraph [0135] and Figure 16).

Omata et al. differs from the instant claimed invention in not disclosing a conveying speed of the recording medium at the fixing unit is equal to or lower than a conveying speed of the recording medium on the second image carrier.

Nagamine et al. discloses an image forming apparatus comprising a conveying speed of a recording medium P at a fixing unit 32 is equal to or lower than a conveying speed of the recording medium P on a conveyance (transfer) belt 22 (paragraph [0074]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the speeds as taught by Nagamine et al. to the fixing unit and the second image carrier of Omata et al. so that the recording medium does not become fouled in the fixing unit (Nagamine et al., paragraph [0075]).

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Omata et al. in view of Nagamine et al. as applied to claim 1 above, and further in view of *In re*

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Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) and *In re Peterson*, 315 F.3d at 1330, 65 USPQ2d at 1382.

Omata et al. in view of Nagamine et al., as discussed above, further discloses “the paper feed rate of the fixing rollers 66U and 66L cannot be the same as that of the paper conveyor belt 22. Hence, the speed at which the paper is fed by the fixing rollers 66U and 66L is set at an optimum value lower than the speed at which the paper is conveyed by the paper conveyor belt 22” (Nagamine et al.; paragraph [0103]).

Omata et al. in view of Nagamine et al. differs from the instant claimed invention in not disclosing the conveying speed of the recording medium at the fixing unit is 90 to 100 % of the conveying speed of the recording medium on the second image carrier.

In re Aller discloses “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.

In re Peterson discloses “The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages.”

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of optimum ranges as taught by *In re Aller* and *In re Peterson* to the speeds of Omata et al. in view of Nagamine et al. because to find the optimum value of the fixing speed involves only routine experimentation.

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Omata et al. in view of Nagamine et al. as applied to claim 3 above, and further in view of Ohkama et al. (US Pat. No. 6,108,500)

Omata et al. in view of Nagamine et al., as discussed above, differs from the instant claimed invention in not disclosing the heat-resistant material is polyimide.

Ohkama et al. discloses an image forming apparatus comprising an endless belt type heat resistive film being made of polyimide (column 5, lines 42-50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the polyimide as taught by Ohkama et al. in place of the heat-resistant material of Omata et al. in view of Nagamine et al. because of the same functionality for providing heat resistance to the belt.

9. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Omata et al. in view of Nagamine et al. as applied to claim 7 above, and further in view of Omata et al. (US Pat. Pub. No. US 2002/0122679 A1)

Omata et al. ('236) in view of Nagamine et al., as discussed above, differs from the instant claimed invention in not disclosing a cleaning roller having a surface roughness greater than a surface roughness of the second image carrier.

Omata et al. ('679) discloses an image forming apparatus comprising a first image carrier 1; a second image carrier 10; a cleaning unit 50 includes a roller 51 having a surface roughness greater than a surface roughness of the second image carrier 10, wherein the roller 51 is moveably supported so as to touch the second image carrier 10 or separate from the second image carrier 10 (paragraphs [0066] and [0068]); the

surface roughness of the second image carrier 10 is 3.5 micrometers or less; and the surface roughness of the roller 51 is 3.5 micrometers or more (paragraph [0066]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the surface roughness as taught by Omata et al. ('679) to the cleaning roller and second image carrier of Omata et al. ('236) in view of Nagamine et al. to effectively move the residual toner from the second image carrier to the cleaning roller (Omata et al. ('679), paragraph [0066]).

Allowable Subject Matter

10. Claims 16-21 are allowed.

11. Claim 15 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: Claim 16 is allowable over the prior art of record because the prior art of record does not teach or suggest a duplex fixing unit comprising a belt wound around between the support roller and the pushing roller, and a guide unit that brings the recording medium into contact with the belt wherein an angle is set to 60 degrees or less, in combination with the remaining claimed limitations.

Other Prior Art

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tompkins et al. (US Pat. No. 5,053,827) discloses a PFA (perfluoroalkoxy) resin which is manufactured and sold by DuPont Company under the TEFLON trademark.

Fukano et al. (US Pat. No. 5,070,373) discloses a simplex fixing device comprising a fixing roller and a pressure belt.

Anzai et al. (US Pat. No. 5,453,822) discloses an image forming apparatus comprising a first image carrier; a second image carrier; and a fixing device.

Kanesawa et al. (US Pat. No. 5,614,999) discloses a fixing device comprising a fixing roller; a pressure belt; and no guide member.

Haneda et al. (US Pat. No. 5,991,563) discloses an image forming apparatus comprising a first image carrier; a second image carrier; and a fixing device.

Kitazawa et al. (US Pat. No. 6,272,309 B1) discloses a fixing device comprising a fixing roller and a pressure belt.

Schlueter, Jr. et al. (US Pat. No. 6,365,280 B1) discloses the PFA is TEFLON.

Sameshima et al. (US Pat. Pub. No. US 2002/0061198 A1) discloses an image forming apparatus comprising a control device for controlling a convey velocity of the recording material in the fixing portion.

Sato et al. (JP 10-039558 A) discloses an image forming apparatus comprising a first image carrier; a second image carrier; and a fixing device.


Oikawa et al. (JP 10-228190 A) discloses a fixing device comprising a fixing roller and a pressure belt.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sophia S. Chen whose telephone number is (703) 308-7617. The examiner can normally be reached on M-F (7:00-3:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Arthur Grimley can be reached on (703) 308-1373. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sophia S. Chen
Primary Examiner
Art Unit 2852

Ssc
October 25, 2004